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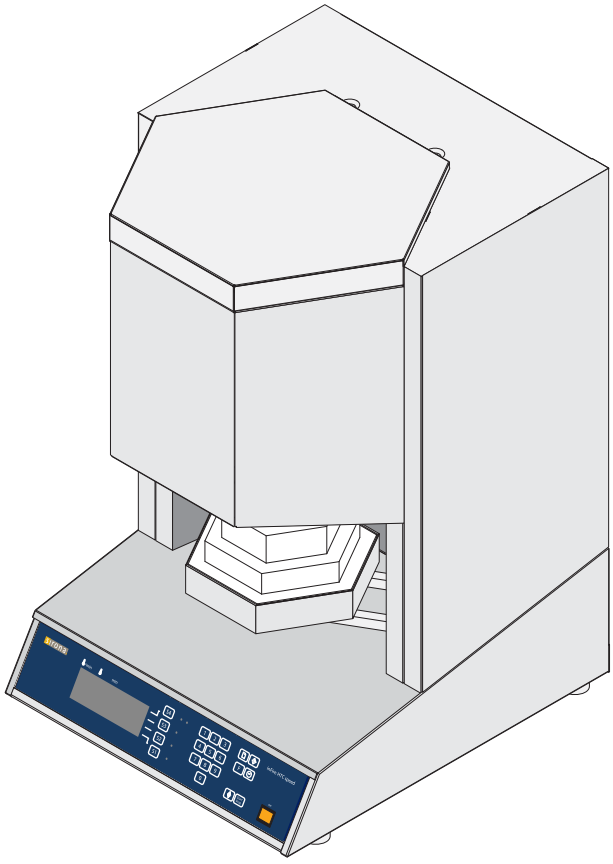
sirona
The Dental Company

inFire HTC speed

Service Manual

English



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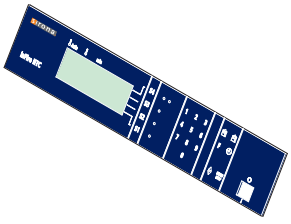
1 Important information

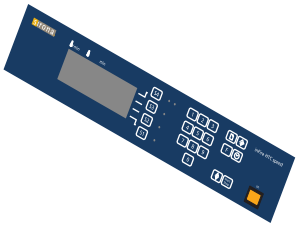
1.1 General information

The graphics used in this document show devices both up to serial number 3000 and after serial number 3000, or before and after the upgrade to Superspeed / non-precious metal sintering.

Example:



Control panel up to serial number 3000 / before the upgrade to Superspeed



Control panel after serial number 3000 / after the upgrade to Superspeed

1.2 Technical data

Model designation:	inFire HTC speed
Type of protection against electric shock:	Protection Class I device
Degree of protection against ingress of water:	Ordinary device (without protection against ingress of water)
Setup location:	Indoors in dry area
Height	up to 2,000 m
Temperature range:	5 °C to 40 °C (41 °F to 104 °F)
Relative humidity	80% up to 31 °C (87.8 °F), above this decreasing linearly to 50% at 40 °C (104 °F), no condensation
Overvoltage category:	II
Pollution degree:	2
Mode of operation:	Continuous operation
Dimensions of unit (W x H x D in mm):	500 x 802 x 565
Dimensions of packaged unit (W x H x D in mm):	630 x 1300 x 730
Furnace chamber:	Diameter 130 mm x 80 mm height
Maximum sintering temperature:	1,650 °C (3,002 °F)
Approx. weight without packaging:	80 kg
Approx. weight including packaging:	96 kg
Rated line voltage (all units except REF: 6401462 and 6416247):	200 VAC – 240 VAC
Rated line frequency (all units except REF: 6401462 and 6416247):	50 / 60 Hz
Rated current consumption (all units except REF: 6401462 and 6416247):	15A
Main unit fuse F1/F2	for 200 VAC − 240 VAC: T16A, Order No. 61 32 448 (10 pcs)
Fuse F3 control board emergency cooling	for 250VAC: T200mA, Order No. 61 32 463 (10 pcs)
Fuse F4 control board emergency cooling	for 250VAC: T2.5A, Order No. 61 32 471 (10 pcs)

Only for REF: 6401462 and 6416247

Rated line voltage:	220 VAC – 230 VAC
Rated power frequency:	50 Hz
Rated current consumption:	13A

1.3 Safety information

As manufacturers of dental and laboratory equipment and in the interest of the operational safety of your system, we stress the importance of having maintenance and repairs performed exclusively by our own personnel or through our authorized representatives. Furthermore, safety-critical system components must always be replaced with original spare parts.

We suggest that you request a certificate specifying the nature and extent of the work performed from the persons who performed it. Furthermore, the certificate should also include any possible changes in rated parameters or working ranges as well as the date, the name of the firm and a signature.

Modifications to this system which may affect the safety of the operator or third parties are prohibited by law.

For reasons of product safety, this product may be operated only with original Sirona accessories or third-party accessories expressly approved by Sirona. The user is responsible for any damage resulting from the use of non-approved accessories.

If any equipment not approved by Sirona is connected, it must comply with the applicable standards:

- EN 60 950 for information technology equipment, and
- EN 61 010-1 for laboratory equipment.

⚠ CAUTION

Damage/danger resulting from unauthorized alterations

The inFire HTC speed high-temperature furnace may only be altered with our express prior approval. We are not liable for unauthorized alterations of any kind.

Prior to opening the unit, connecting a measuring instrument or replacing parts:

➢ **Switch off the unit.**
➢ **Disconnect the power plug.**

⚠ WARNING

Separate circuit

The inFire HTC speed high-temperature furnace must always be connected to a separate circuit with at least a 16A fuse. The fuses must be of the **C** type.

⚠ WARNING

Risk of burns due to hot surfaces

The inFire HTC speed high-temperature furnace may develop hot surfaces in some areas after extended use. Use the necessary caution around the unit, especially when the furnace is operated for extended periods.

➢ Never touch the hot surfaces.

⚠ WARNING

Risk of burns due to hot surfaces

Once the program has ended and the furnace has shut down, the cooling fan will run until the interior temperature of the furnace has been reduced to normal. The power plug may not be disconnected prior to this point.

Wireless phone interference with laboratory equipment

To ensure safe operation of laboratory equipment, the use of mobile wireless phones in laboratory environments must be prohibited.

Note on the prevention, recognition and elimination of unintended electromagnetic effects

This device is a piece of electrical equipment with a supply voltage below 1000 VAC and is intended for commercial use. It is to be installed in dental laboratories or other areas with a controlled electromagnetic environment. The applicable EMC requirements comply with EN 61326:2006.

Troubleshooting:

If you encounter difficulties, check the Troubleshooting section first and proceed as instructed there.

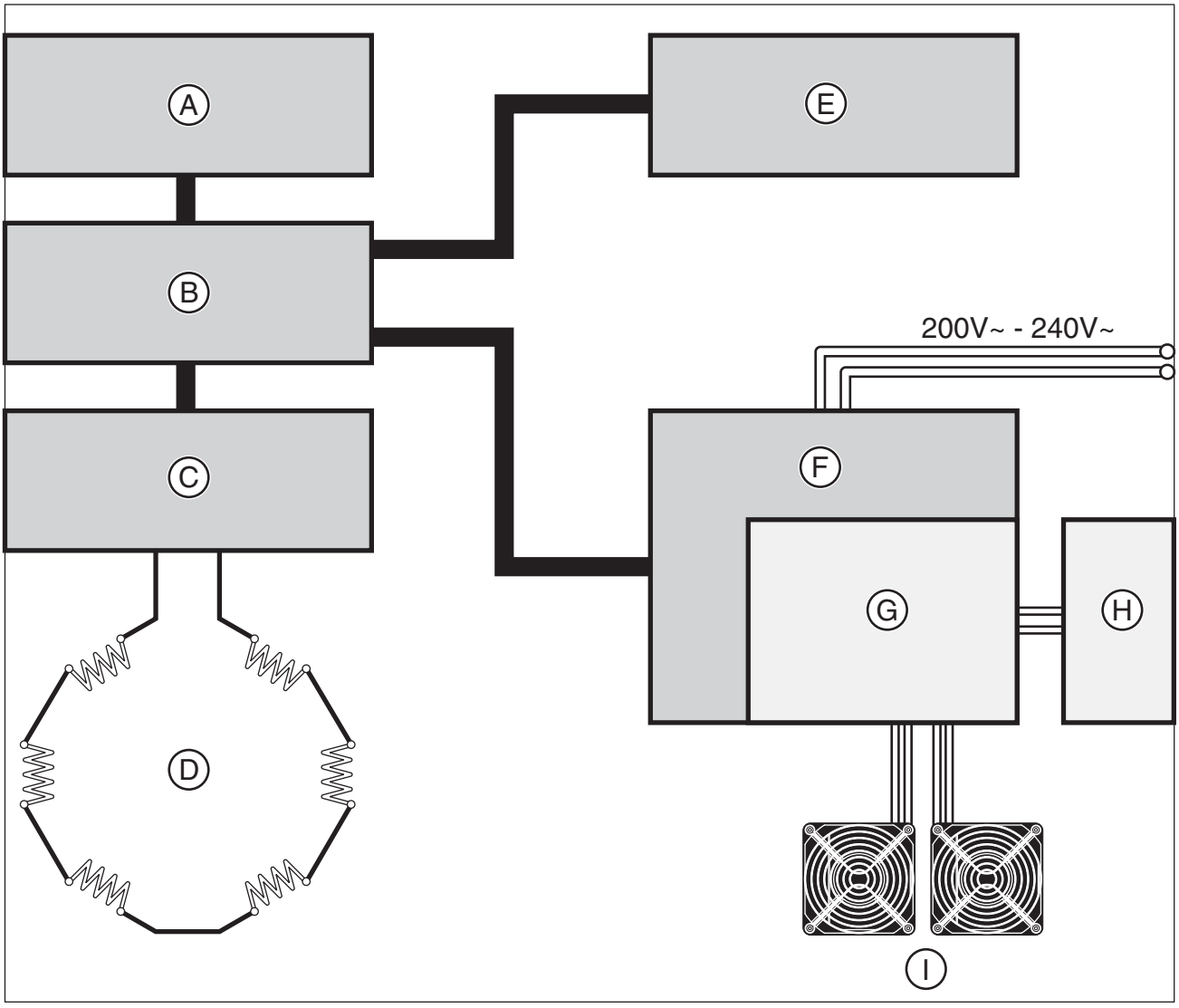
⚠ WARNING

Risk of burns due to objects falling out

As there is a serious risk of burns in this case, it is essential to install a fire-proof table and floor covering.
I. You are advised to wear heat-proof protective clothing when carrying out super speed sintering. In accordance with professional association regulations, the operator of the site is responsible for providing the user with appropriate protective clothing.
II. The operator of the site is responsible for giving the user appropriate safety instructions.
III. If a fracture occurs during the sintering process as a result of a failure to adhere to the recommended drying procedure, there is a risk that hot objects will fall out as soon as the furnace door is opened.
IV. The furnace should only be loaded and unloaded using the crucible fork. For safety reasons, a trained user must be present when the furnace is being loaded or unloaded.

2 How does inFire HTC work?

2.1 Functional diagram



A	Control panel		F	Energy module
B	Controller board		G	Storage battery buffering
C	Transformer		H	Storage battery
D	Heating elements		I	Fan
E	Door drive			

2.2 Description of the furnace

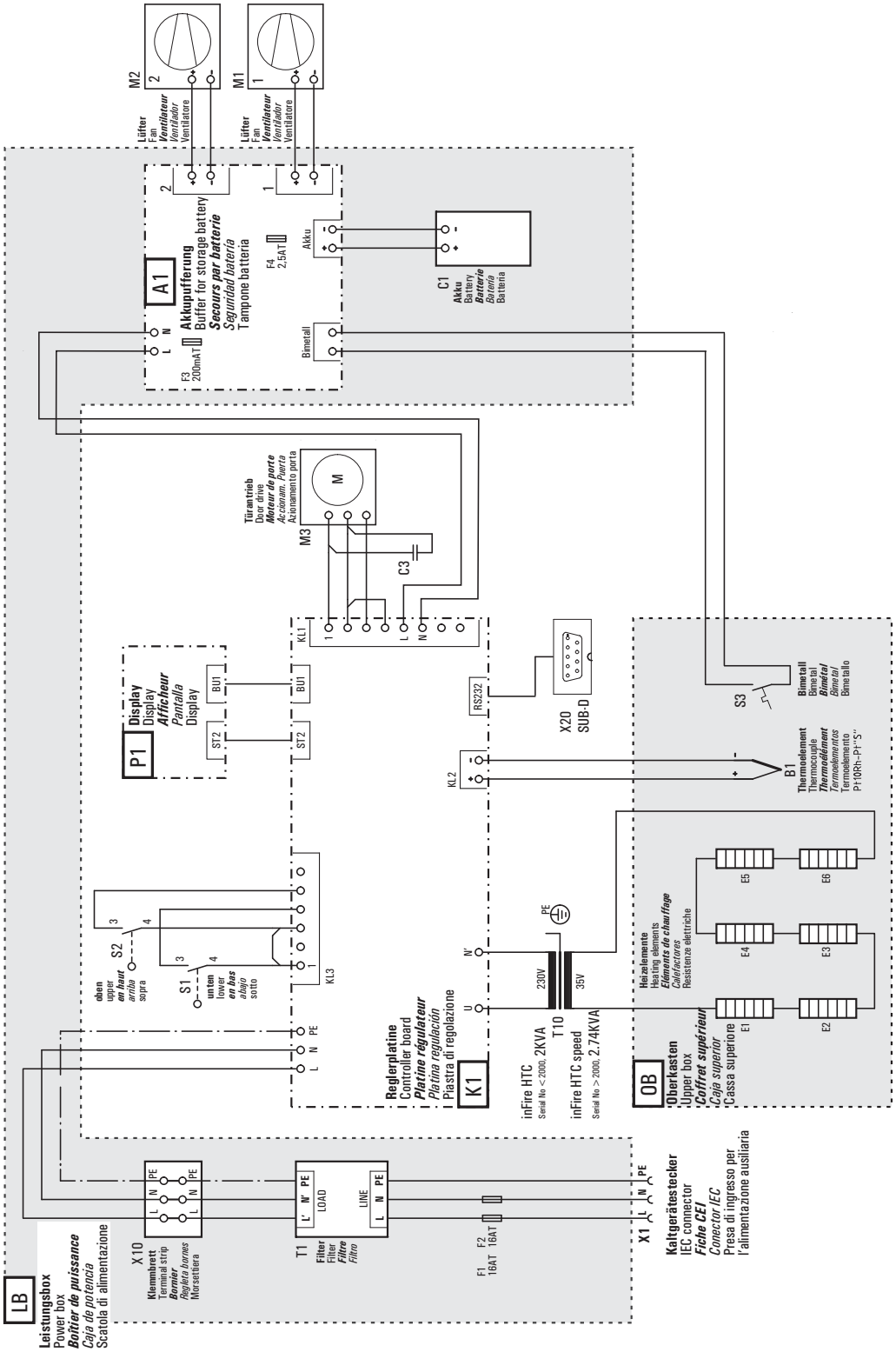
The heating system consists of six high-quality $MoSi_2$ heating elements. Thanks to the excellent interior insulation, the energy consumption of the unit is low.

The furnace is equipped with a safety feature that prevents the uncontrolled opening of the furnace.

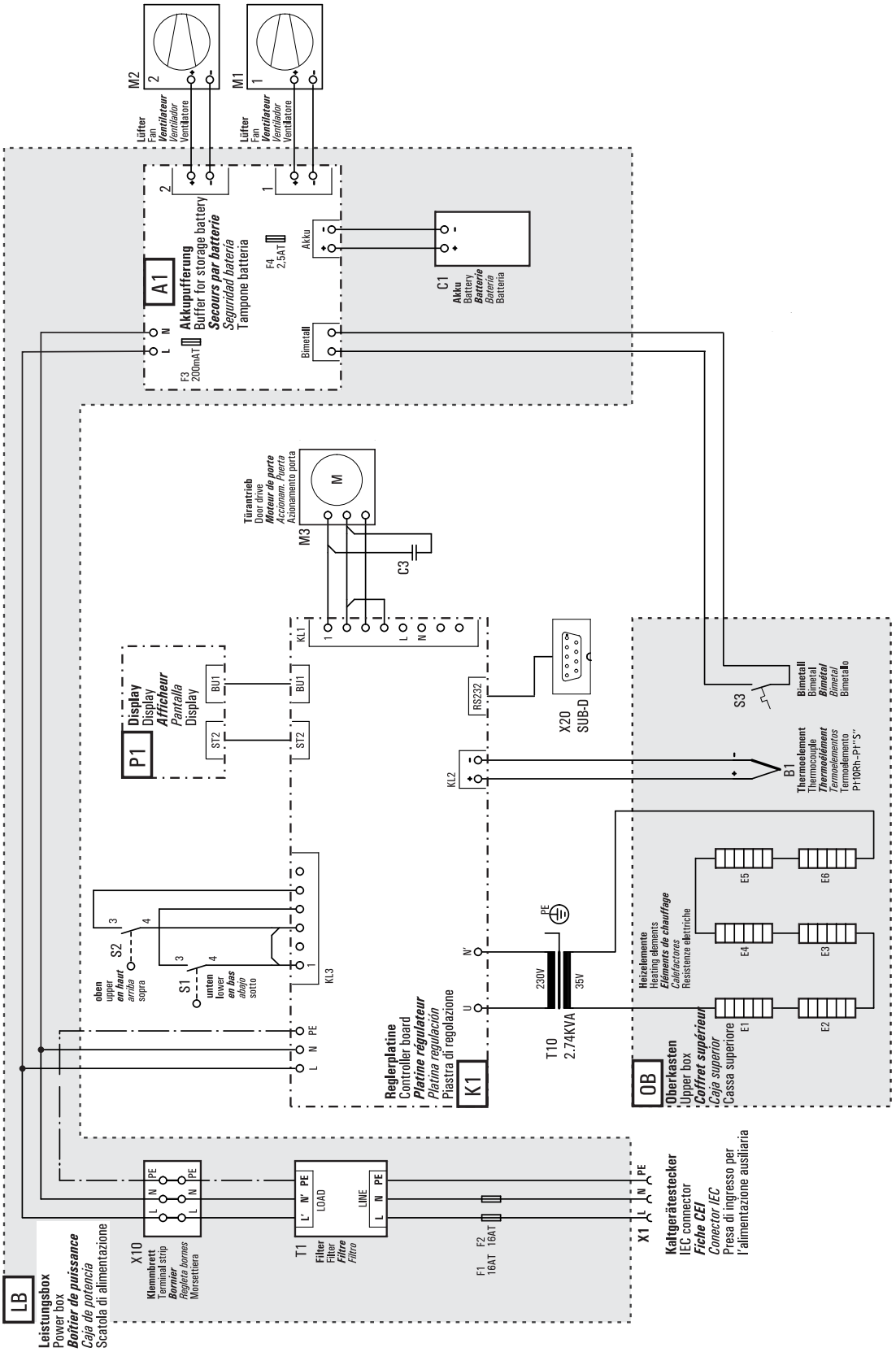
The HT sensor is equipped with a thermocouple burn-off device which prevents the furnace from accidental overheating in the case of a sensor defect.

3 Circuit diagram

3.1 Up to serial no. 3000

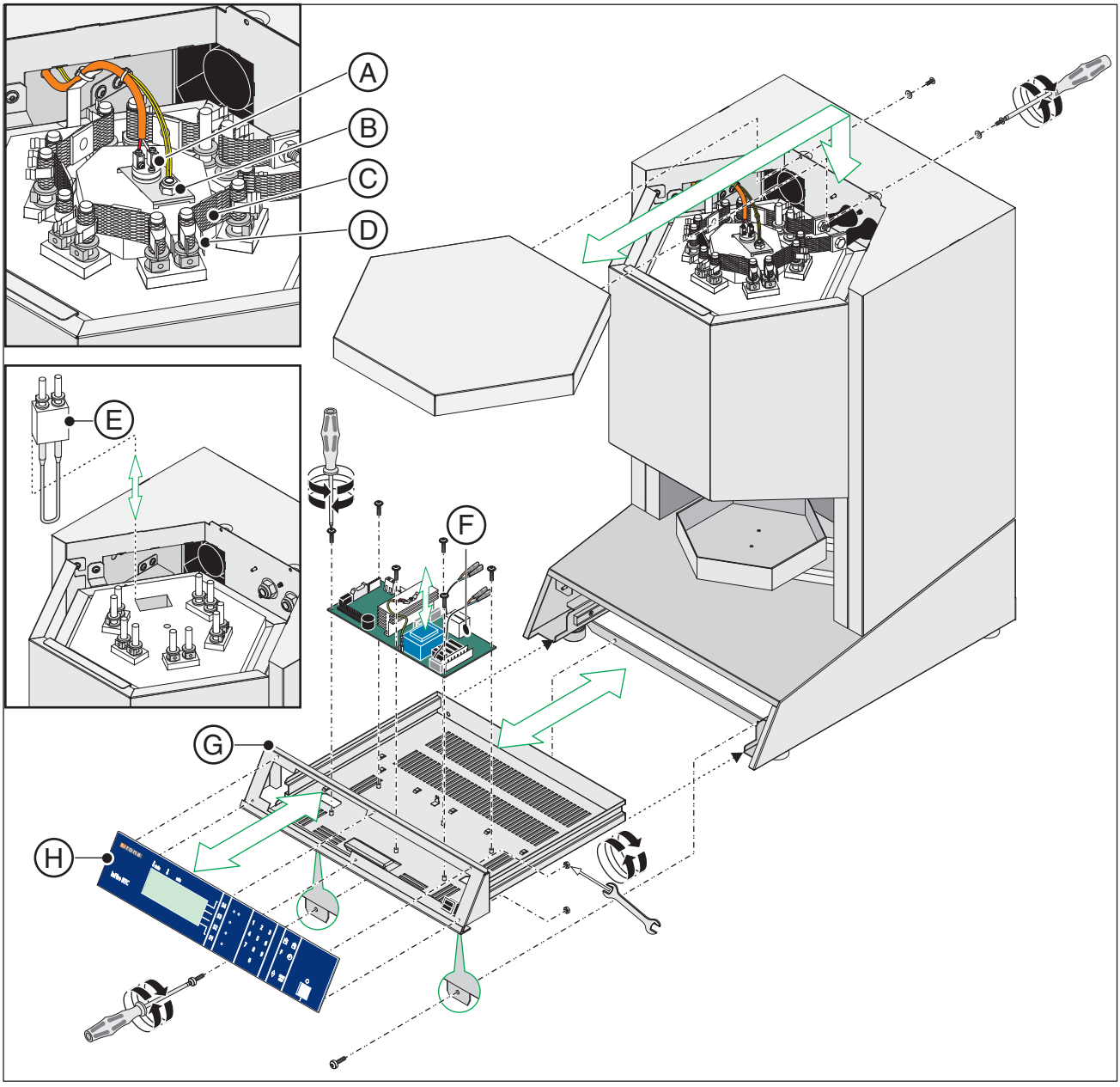


3.2 From serial no. 3000

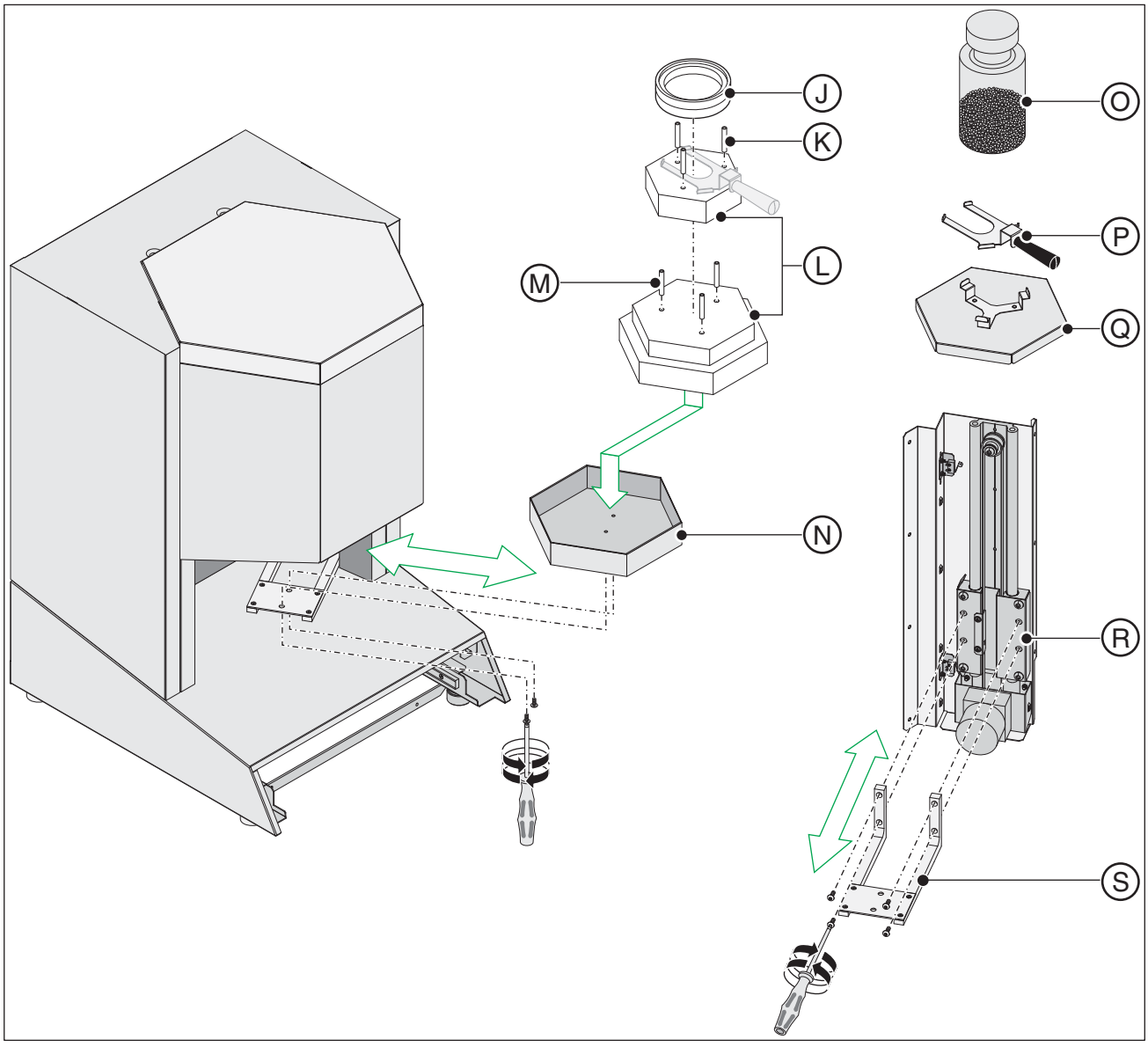


4 System overview

4.1 Front view

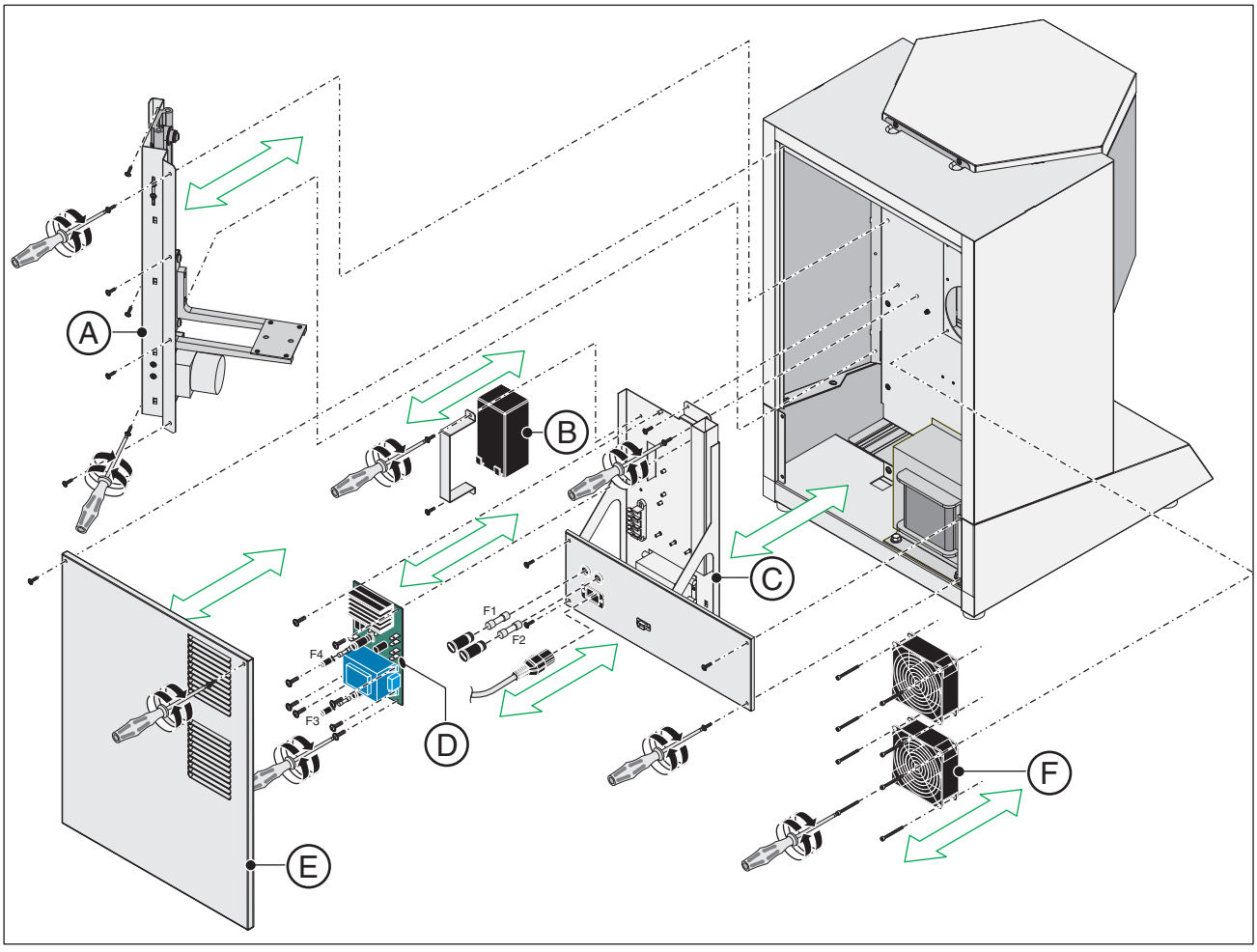


A	Thermocouple	E	Heating element
B	Bimetal switch	F	Controller board
C	Aluminum band	G	Drawer
D	Clamp	H	Control panel



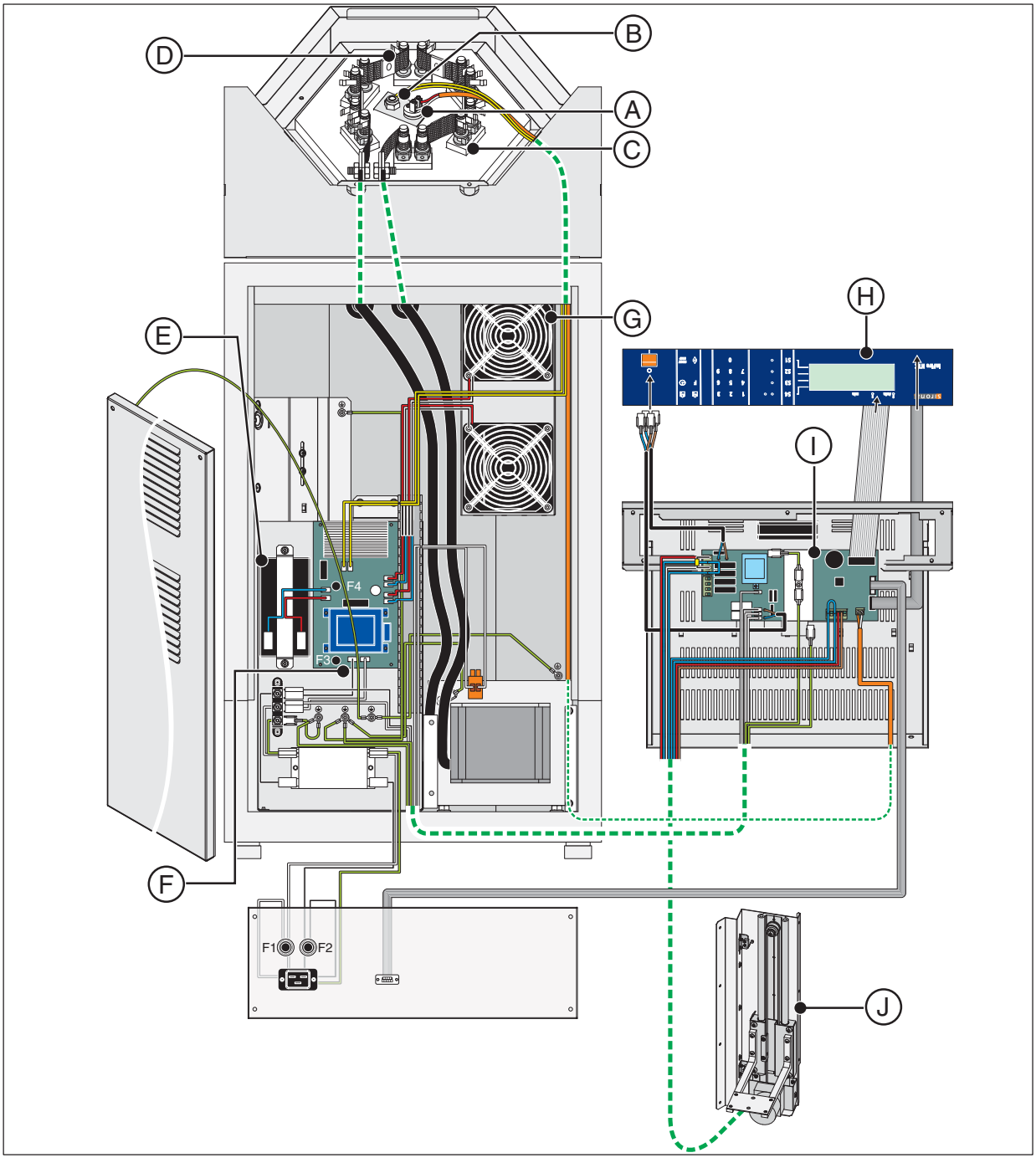
J	Sintering tray	O	sinter beads
K	Ceramic tube	P	crucible fork
L	Door insulation	Q	Crucible fork rack
M	Ceramic tube	R	Door drive unit
N	Door shell	S	Door holder

4.2 Rear view



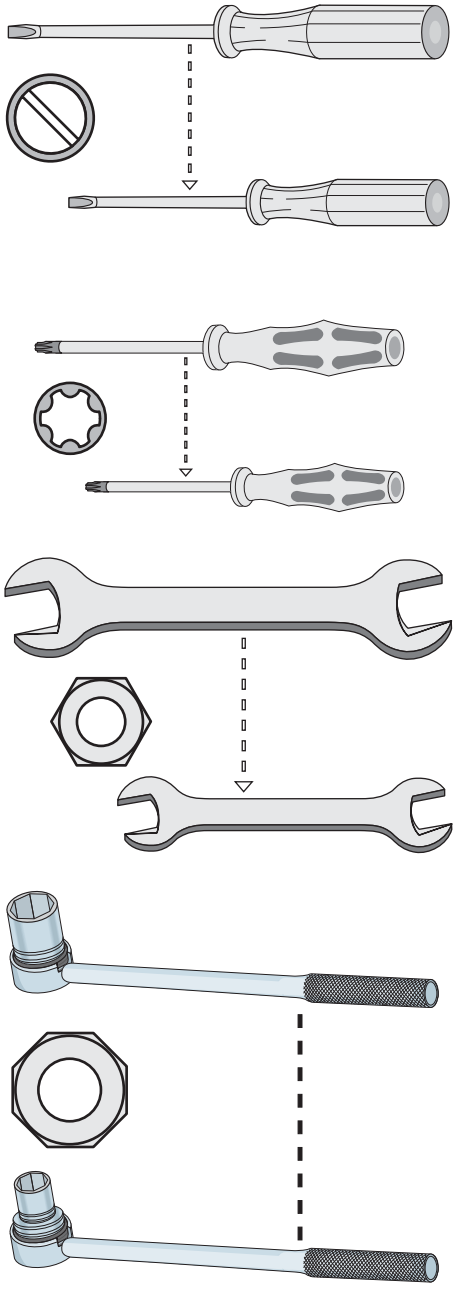
A	Door drive unit	D	Control board for emergency cooling
B	Storage battery	E	Back panel
C	Energy module	F	Fan

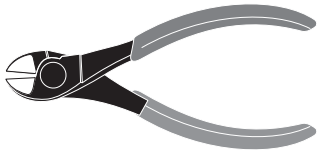
5 Wiring diagram

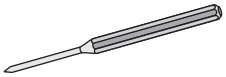


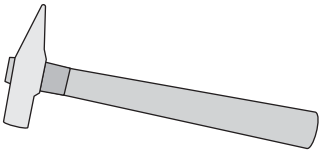
A	Thermocouple	F	Control board for emergency cooling
B	Bimetal switch	G	Fan
C	Heating element	H	Control panel
D	Aluminum band	I	Controller board
E	Storage battery	J	Door drive unit

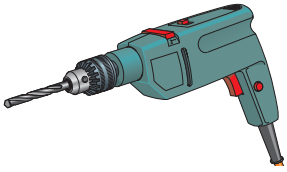
6 Tools







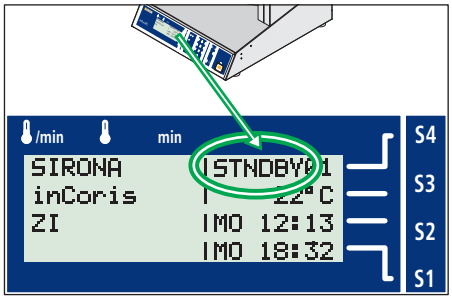




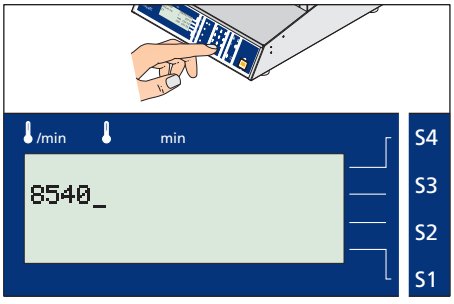
7 Initializing the controller

In order to guarantee optimal controller performance of the various laboratory furnaces, different control parameters are preset.

The following code resets the controller to the factory default settings:



✓ The **LCD display** must be set to *"STNDBY"*.



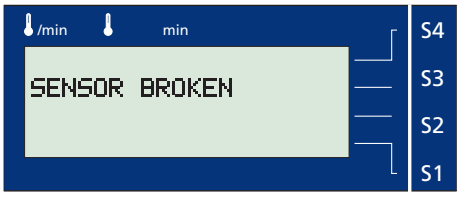
1. Press the following key for the HT furnace series: **F**
   ↳ The cursor appears on the LCD display.
2. Enter the following key sequence: **8 5 4 0**
   ↳ The controller is now reset to the factory default and the applicable control parameters are activated.

8 Troubleshooting

8.1 Error messages from electronic components

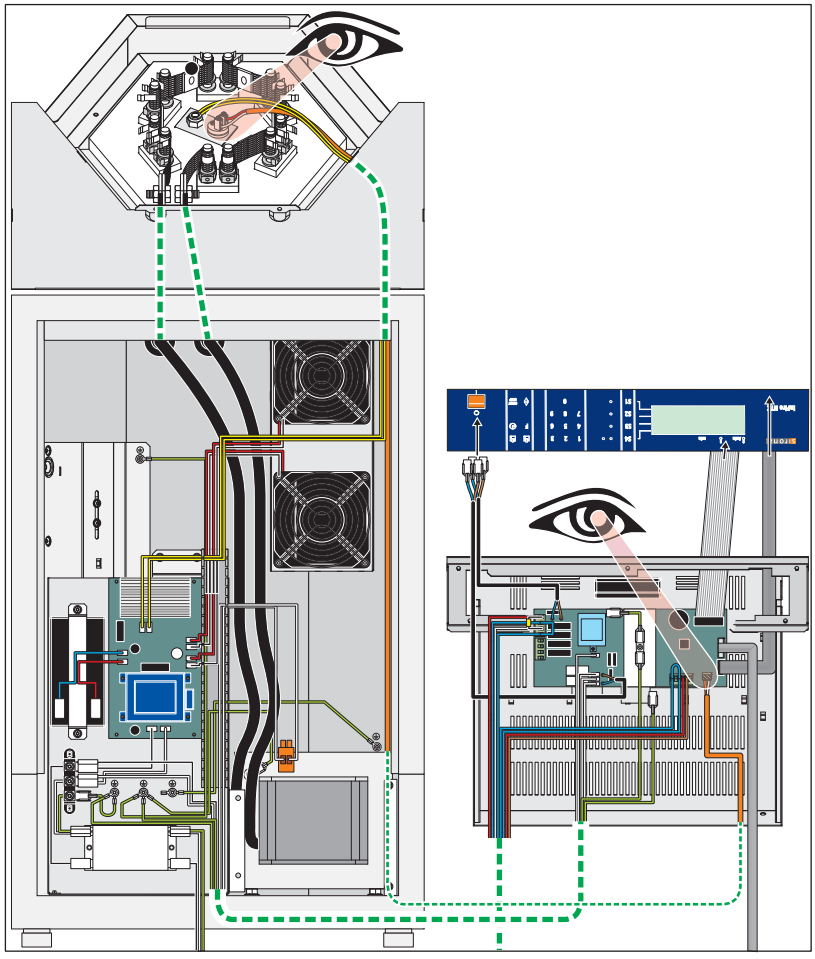
Error messages are displayed on the LCD screen. They are accompanied by an acoustic signal.

8.1.1 Error message: SENSOR BROKEN



Cause: Thermocouple connections are loose.

Elimination: Check the thermocouple connections.

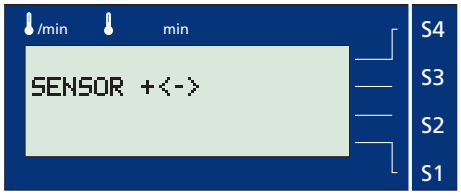


Cause: Thermocouple is defective.

Elimination: Replace the thermocouple.

See "Replacing the controller board [→ 29]".

8.1.2 Error message: SENSOR +<->



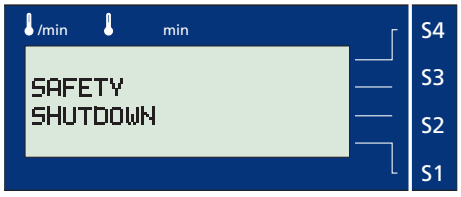
Cause: Thermocouple is incorrectly connected.

Elimination: Swap the thermocouple connections.

Cause: Temperature inside the furnace is significantly below room temperature.

Elimination: Open door and wait until the heating chamber has reached room temperature

8.1.3 Error message: TURN-OFF



Cause: Furnace temperature exceeds 1650°C.

Elimination: Switch the furnace OFF and let it cool down.

Call customer service.

8.1.4 Error message: POWER FAILURE

Cause:

Power failure when furnace temperature rises above 1000°C for more than 10 s.

Multiple power failures when furnace temperature rises above 1000°C for a total time of more than 10 s.

Elimination:

This error message must be acknowledged with the *"START"*/*"STOP"* key.

Switching the unit off and on does not cause the error to disappear.

If such malfunctions occur frequently, advise the user to contact his local electric utility company or take other appropriate action to ensure a constant power supply.

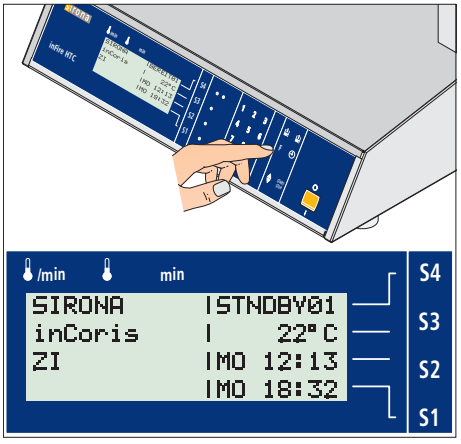
8.2 Error without message on the display

8.2.1 Error: Wrong time displayed

Cause:

Incorrect time in controller.

Elimination:



Adjust the time.

The current time always has to be adjusted manually when clocks are changed for daylight savings time.

1. Press function key "F".
2. Use key S2 to set the current time via the numeric keys. (Monday = 1, Tuesday = 2 ... Sunday = 7.).
3. Press key S1 to quit the dialog.
   ↳ The changes are saved in the memory.

8.2.2 Error: Furnace does not heat up although autostart program is running

Cause

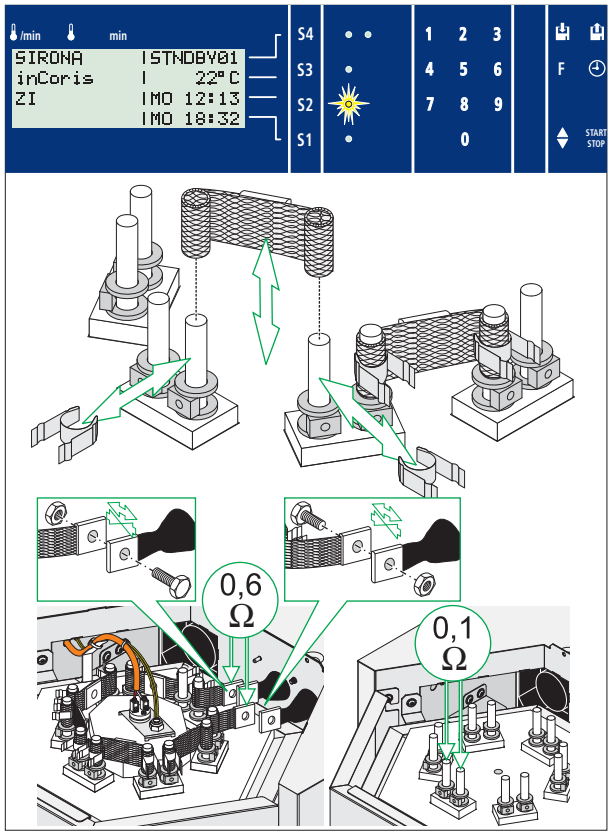
Power was out for a long time during the autostart program.

Elimination

Check the power connection.

Make sure power connection is not switched with a timer.

8.2.3 Error: LED on control panel indicates heating, but furnace does not heat



Cause

Heating defective.

Elimination

Check whether heating is jammed, measure resistance with ohmmeter:

$R_{o.k.}$ = 0.6 Ω

individual heating element = 0.1 Ω

Replace defective heating element (see "Replacing the heating element [→ 28]“).

Call customer service.

Cause

Controller board defective.

Elimination

Replace controller board (see "Replacing the controller board [→ 29]“).

Call customer service.

8.2.4 Error: Controller board "forgets" the stored programs

Cause

Controller board defective.

Elimination

Replace controller board (see "Replacing the controller board [→ 29]“).

Call customer service.

8.2.5 Error: Controller board "forgets" the time

Cause

Controller board defective.

Elimination

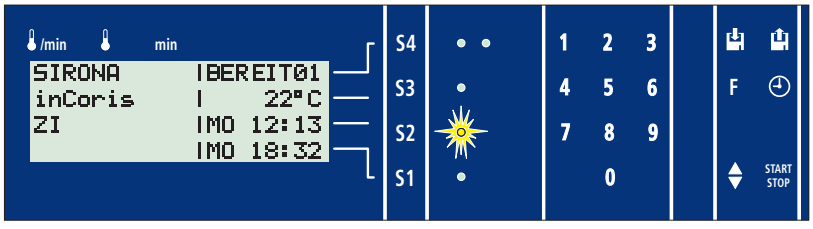
Replace controller board (see "Replacing the controller board [→ 29]“).

Call customer service.

8.2.6 Error: No display reading, yellow pilot light of ON/OFF switch is on, diode flashes briefly

Description of the error

- No display.
- Yellow pilot light of ON/OFF switch is on.
- Diode flashes briefly when unit is switched on.



Cause

Controller board defective.

Elimination

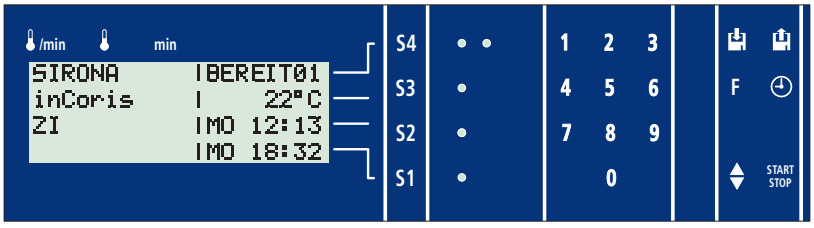
Replace controller board (see "Replacing the controller board [→ 29]“).

Call customer service.

8.2.7 Error: No display reading, yellow pilot light is on, diode is not lit

Description of the error

- No display.
- Yellow pilot light of ON/OFF switch is on.
- Diode does not light up when unit is switched on.



Cause

Protection fuse of the furnace is defective.

Elimination

Switch furnace **off**, wait for 30 seconds. Switch furnace **on**.

If this produces no results:

Cause

Controller board defective.

Elimination

Replace controller board (see "Replacing the controller board [→ 29]“).

Call customer service.

8.2.8 Error: No display reading, yellow pilot light is off

Description of the error

- No display.
- Yellow pilot light of ON/OFF switch is off.

Cause

No line voltage.

Elimination

Check the breakers in the fuse box/the connecting cable.

Call customer service.

8.2.9 Error: Furnace triggers circuit breaker

Cause

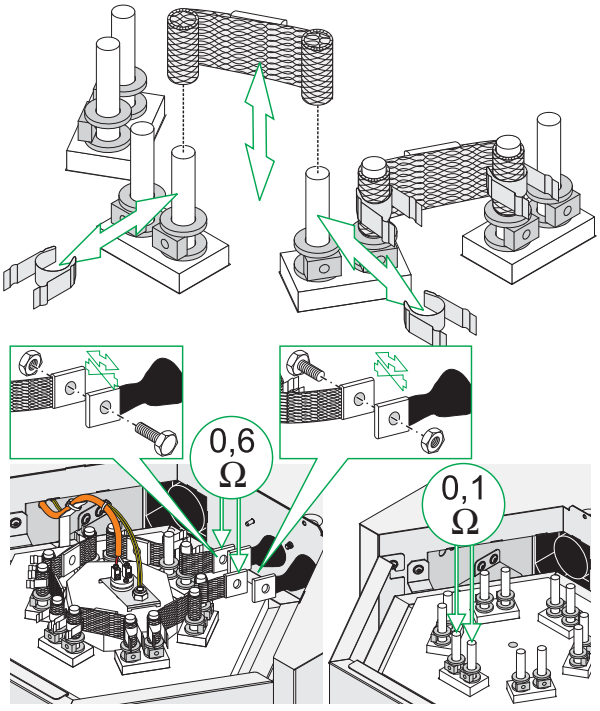
Unsuitable circuit breaker.

Elimination

Install a 16 A K circuit breaker.

Use circuit breaker type C from serial no. 3000.

8.2.10 Error: Furnace triggers the circuit breaker in the fuse box



Cause

Heating defective.

Elimination

Check whether heating is jammed, measure resistance with ohmmeter:

$R_{o.k.}$ = 0.6 Ω

individual heating element = 0.1 Ω

Replace defective heating element (see "Replacing the heating element [→ 28]“).

Call customer service.

Cause

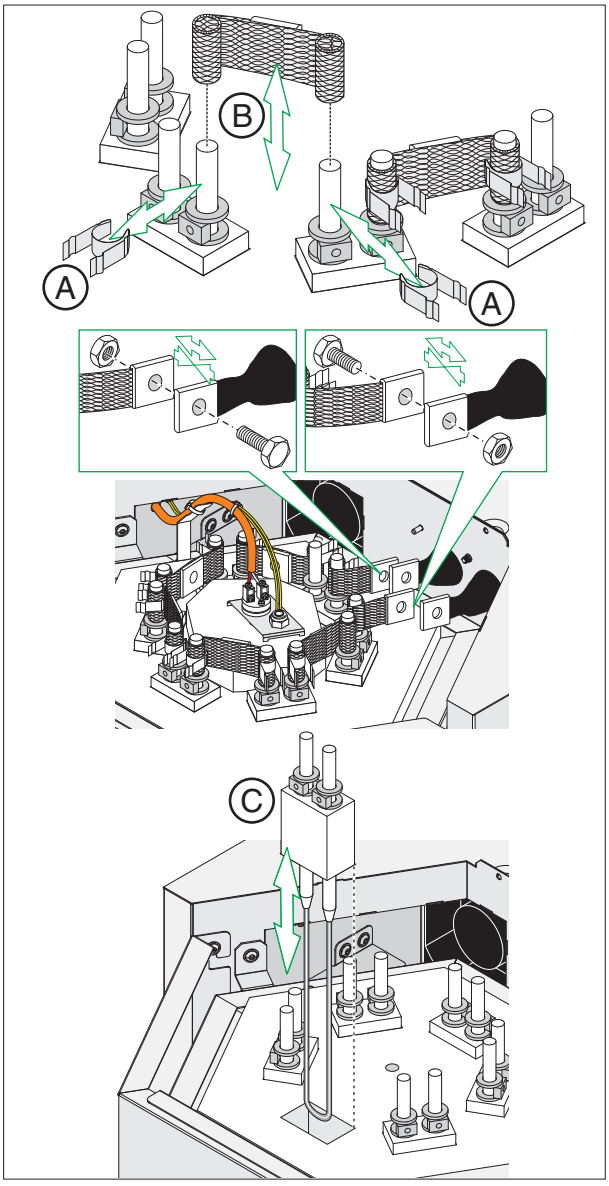
Fault current circuit breaker is too sensitive.

Elimination

Install 30 mA circuit breaker.

9 Replacing parts

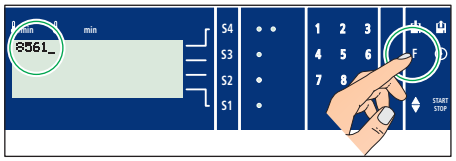
9.1 Replacing the heating element

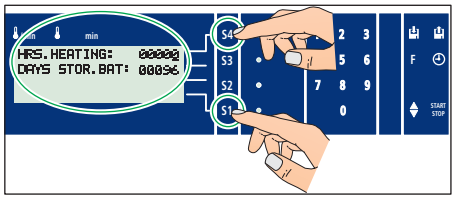


✓ The unit is switched off and its power plug is disconnected.

1. Loosen the clamps **(A)** and pull off the aluminum band **(B)**.
2. Replace the heating element **(C)**.
3. Refasten the aluminum band **(B)** with the clamps **(A)**.

9.1.1 Resetting the counter after replacing the heating element



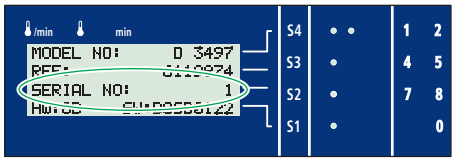


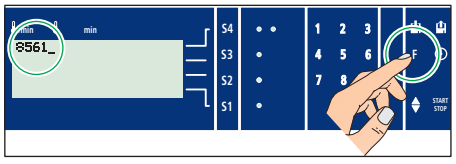
✓ The heating element has been replaced.

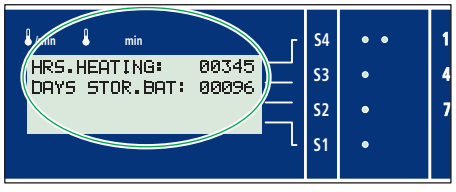
1. Enter the code **F8561**.
   From serial number 3000 or from converted electronics (Superspeed upgrade kit) the service code is: **F08561**.
2. Press the **S4** key in the display window for the operating hours.
   ↳ The entry cursor is at the beginning of the entry field for the operating hours of the heating.
3. Enter the **0** five times.
4. Press the **S1** key (next).
   ↳ The counter for the heating operating hours is now reset.

9.2 Replacing the controller board

Preparations







1. Switch the furnace on.
   ↳ Line 3 of the display shows the serial no. for 3 seconds (e.g. *"SERIAL NO"*: 1).
2. Note the displayed *"SERIAL NO"*.
3. Enter the code **F8561**.
   From serial number 3000 or from converted electronics (Superspeed upgrade kit) the service code is: **F08561**.
   ↳ Line 1 of the display shows the operating time of the heating in hours (e.g. *"HRS. HEATING"*: 00345) and line 2 indicates the operating time of the storage battery in days (e.g. *"DAYS STOR. BAT"*: 00096").
4. Note the displayed values and then switch the furnace off.

NOTICE

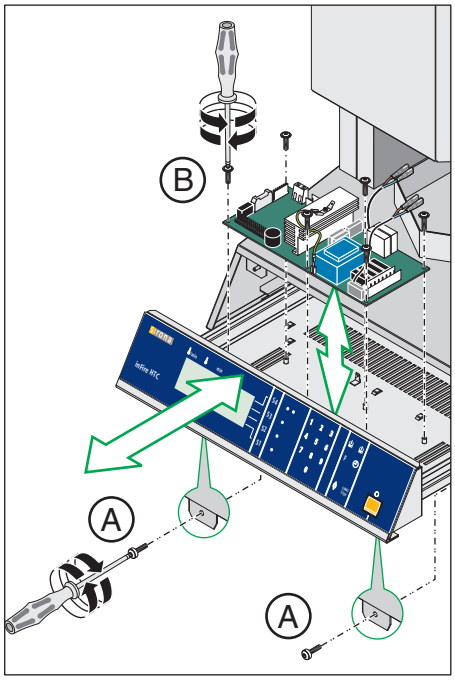
Data of the controller board can no longer be read because of a defect

If the data of the controller board can no longer be read because of a defect, you can also refer to the type label at the back of the furnace for the serial number.

Add the value 8760 for the operating hours of the heating system for every year of operation.

Add the value 365 for the operating days of the storage battery for every year of operation.

Replacing the controller board



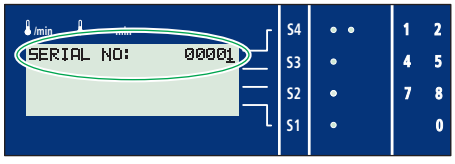
✓ The furnace is switched off.

1. Loosen and remove both screws **(A)**.
2. Pull out the drawer.
3. Loosen the connections to the controller board.
4. Remove the six screws **(B)** of the controller board.
5. Replace the controller board.

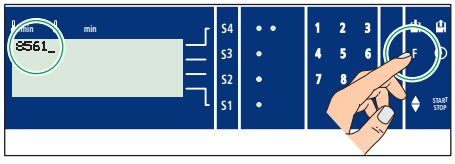
9.2.1 Resetting the counter after replacing the controller board

✓ The controller board has been replaced.

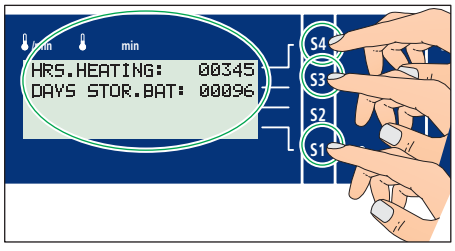
✓ The furnace is switched off.



1. Switch the furnace on.
   ↳ The software immediately displays the input window for the serial number.
2. Enter the **five-digit serial number** noted earlier.

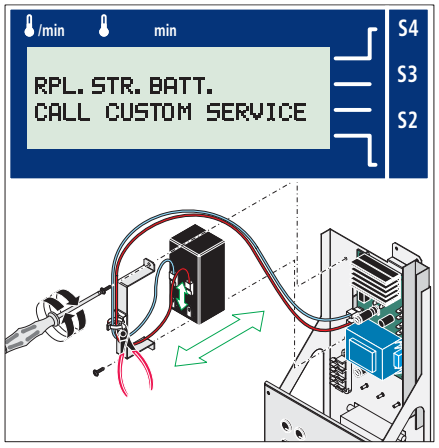


3. Enter the code **F8561**.
   From serial number 3000 or from converted electronics (Superspeed upgrade kit) the service code is: **F08561**.



4. Press the **S4** key in the display window for the operating hours.
   ↳ The entry cursor is at the beginning of the entry field for the operating hours of the heating.
5. Enter the **five-digit value** noted earlier.
6. Press the **S3** key.
   ↳ The entry cursor is at the beginning of the input field for the operating days of the storage battery.
7. Enter the **five-digit value** noted earlier.
8. Press the **S1** key (next).
   ↳ This completes the configuration of the controller board.

9.3 Replacing the storage battery



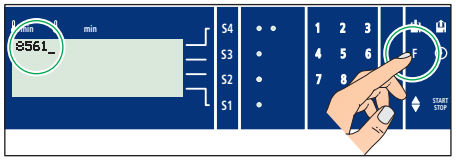
IMPORTANT

The battery should be replaced after two years at the latest or when this is indicated on the *"REP.STR. BATT."* display.

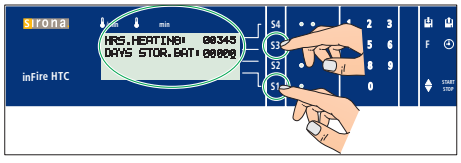
Replace the battery as follows when the following message appears on the display:
"REP.STR. BATT."
"CALL CUSTOM SERVICE"

1. Cut and remove the cable tie.
2. Detach the red (+) and blue (-) leads from the battery.
3. Unscrew and remove the bracket and replace the battery with a new one.
4. Screw the bracket back on again.
5. Plug the red and blue leads back on and secure them with a cable tie.

9.3.1 Resetting the counter after replacing the storage battery



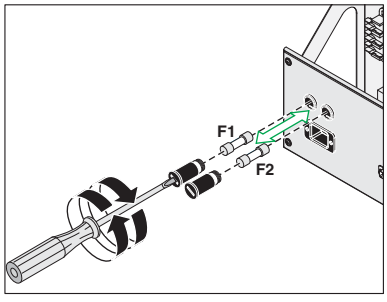
1. Enter the code **F8561**.
   From serial number 3000 or from converted electronics (Superspeed upgrade kit) the service code is: **F08561**.



2. Press the S3 key in the display window for the operating hours.
   ↳ The entry cursor is at the beginning of the input field for the operating days of the storage battery.
3. Enter the "0" five times.
4. Press the "S1" key (next).

↳ The counter for the battery operating days is now reset.

9.4 Replacing main fuses F1/F2

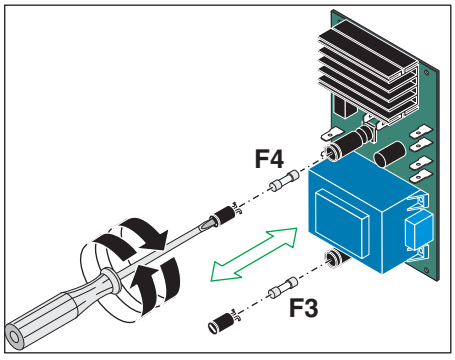


For 200 VAC to 240 VAC: T16A,

Order No.: 61 32 448 (10 pcs.)

➢ Unscrew the defective unit main fuses F1/F2 from the energy module and replace them with new ones.

9.5 Replacing fuses F3/F4

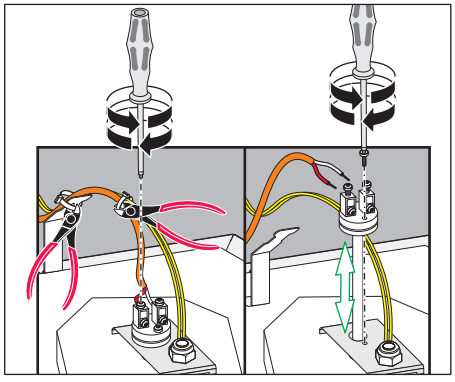


Fuse F3 for 250 VAC: T200mA,
Order No.: 61 32 463 (10 pcs.)

Fuse F4 for 250 VAC: T2.5A,
Order No.: 61 32 471 (10 pcs.)

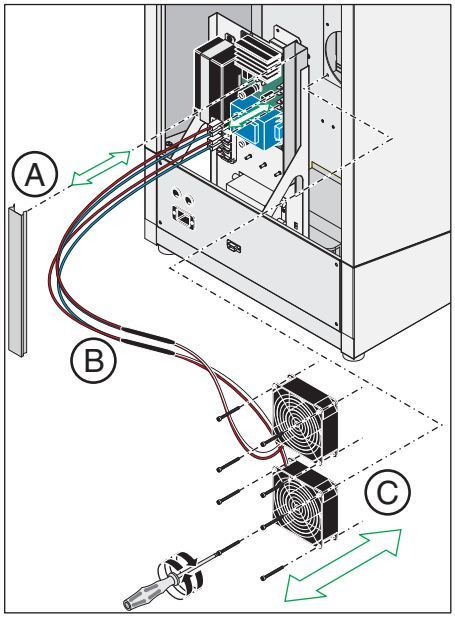
➢ Unscrew the defective fuses F3/F4 from the control board for emergency cooling and replace them with new ones.

9.6 Replacing the thermocouple



1. Cut and remove the cable ties.
2. Detach the red (+) and white (-) cables from the thermocouple.
3. Unscrew and remove the thermocouple and replace it with a new one.
4. Screw the red and white leads tight again and secure them with cable ties.

9.7 Replacing the fan

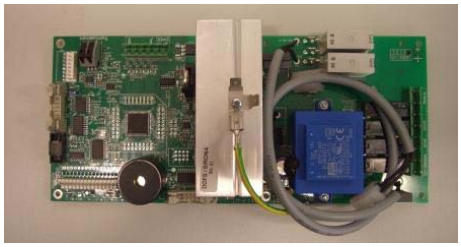


1. Loosen the cover **(A)** of the cable duct.
2. Pull the connector of the fan lead **(B)** off of the control board for emergency cooling.
3. Replace the fan **(C)**.
4. Reattach the plug of the fan cable **(B)** and the cover **(A)**.

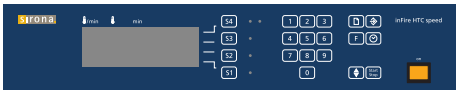
10 Upgrading

10.1 Upgrading to Superspeed

10.1.1 Scope of supply



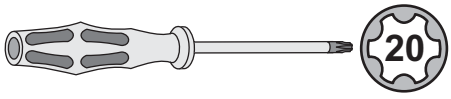
- Controller board



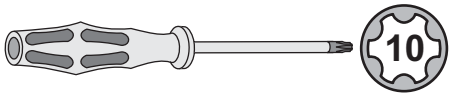
- Control panel

- Super speed crucible fork
- Super speed crucible
- Superspeed fireproof tray

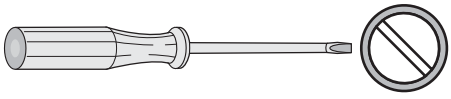
10.1.2 Required tools



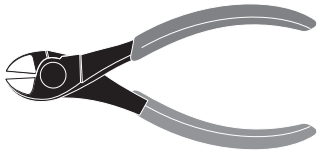
- Screwdriver, Torx®/TX20



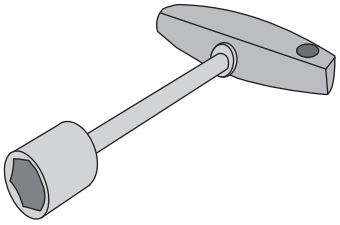
- Screwdriver, Torx® / TX10



- Electronic screwdriver (small, flat blade)



- Side cutting pliers



- Wrench insert 5.5

10.1.3 Introduction

These instructions describe the modification of an inFire HTC speed with a new current control and a new control panel. To do this, the installed parts are replaced by the parts supplied.

10.1.4 Procedure

10.1.4.1 Disconnect the power supply

⚠ WARNING

Electrical power!

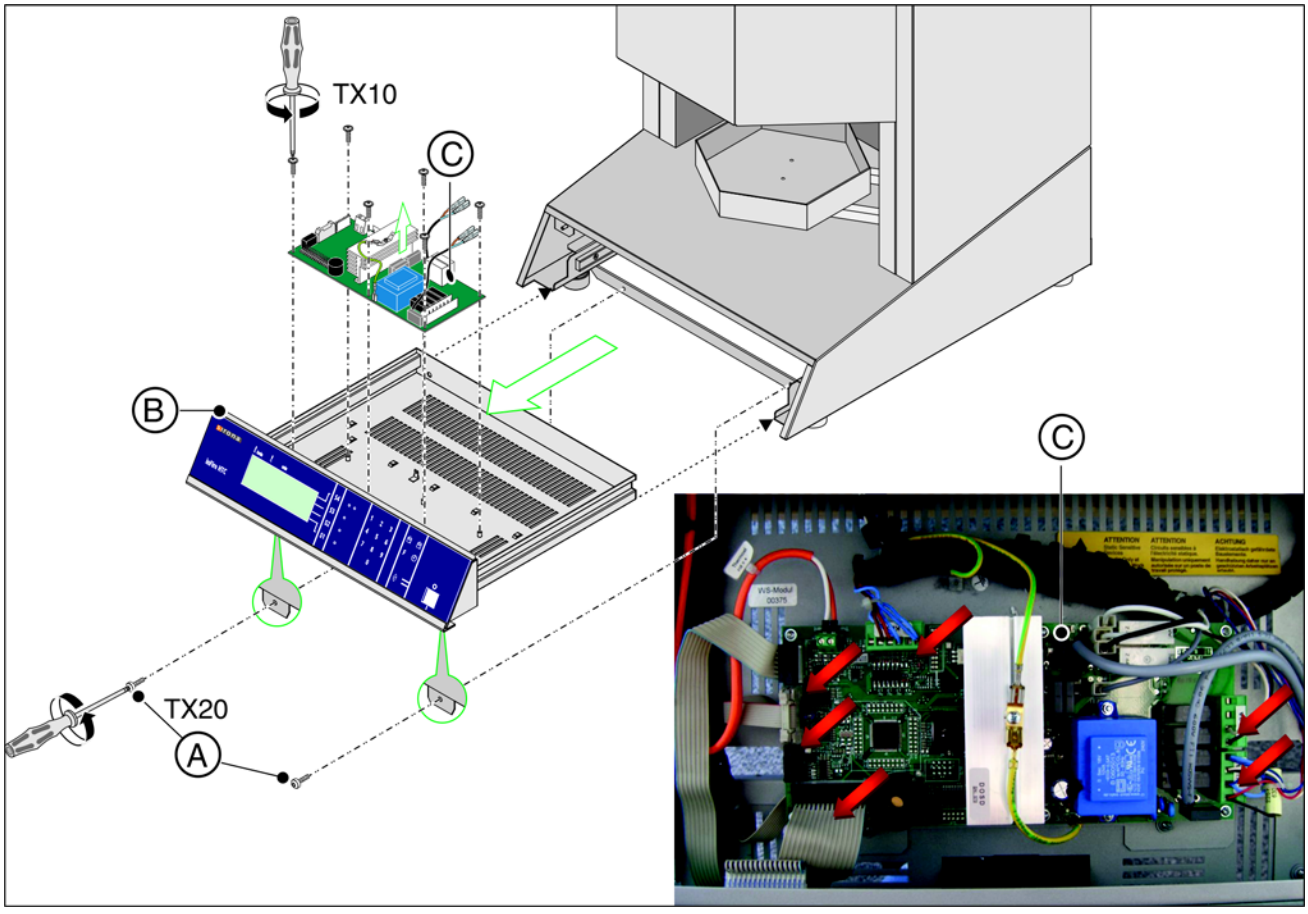
Potentially lethal shock hazard!

➢ Do not touch live cables and components with wet hands.
➢ Please observe the accident prevention regulations for handling electricity.
➢ Disconnect the power supply of the unit before installation, maintenance, cleaning, and repair work, and ensure that the power will not be inadvertently switched on.

➢ Disconnect the power supply of the unit and ensure that the power will not be inadvertently switched on.

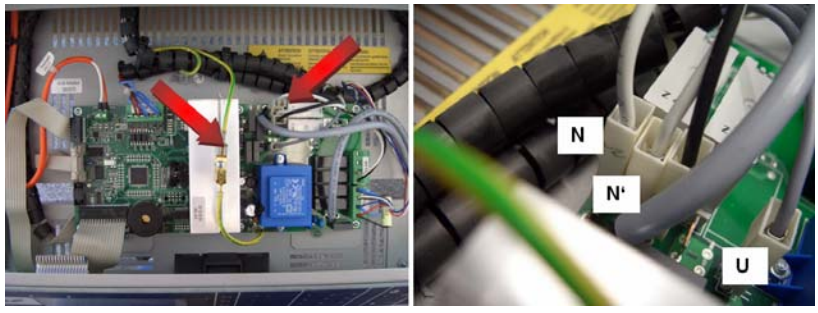
10.1.4.2 Removing the regulator board

✓ The unit is switched off and its power plug is disconnected.



Overview image

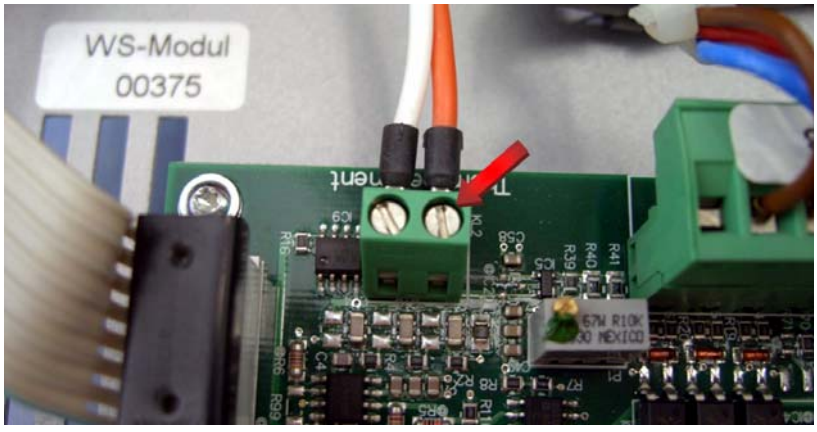
1. Unscrew both screws (A).
2. Pull out the drawer (B).
3. Pull out all the connectors marked with red arrow points from the regulator board (C).



4. Pull out the cable lug connections marked with red arrow points from the regulator board.

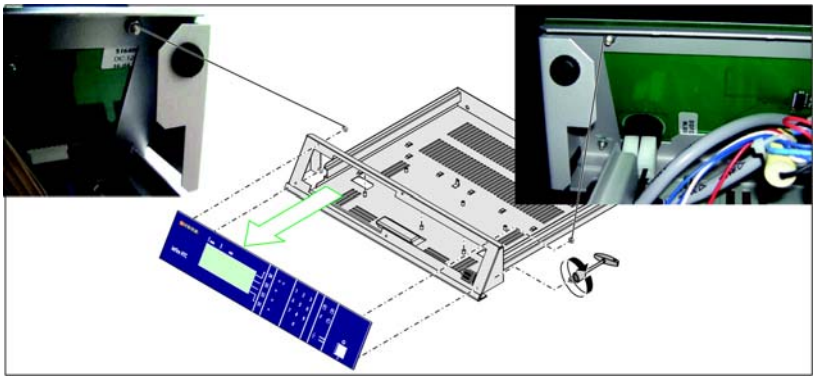
5. Cut the cable tie of the 2 cables of the main switch.

6. **NOTICE! Always pay attention to the cable markings here!** Pull out the 4 cable lugs.

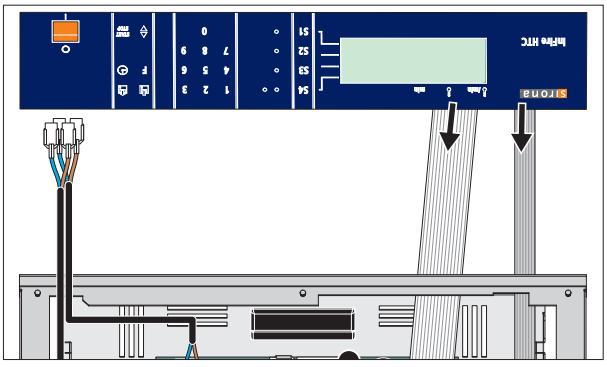


7. Release the two screws and remove the thermocouple cables.
8. Unscrew the regulator board (C), as illustrated in the overview image (6 TX10 screws) and remove the board (no longer required).

10.1.4.3 Unscrewing the control panel



1. Unscrew the 4 nuts (M5.5) with a short socket wrench.

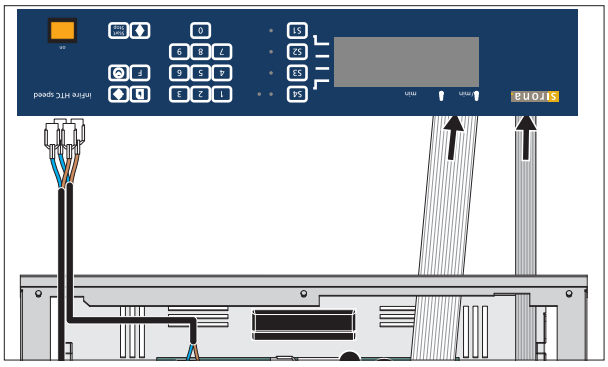


2. Remove all the plugs from the rear side of the control panel.
3. Remove the control panel (no longer required)

10.1.4.4 Installing the new regulator board

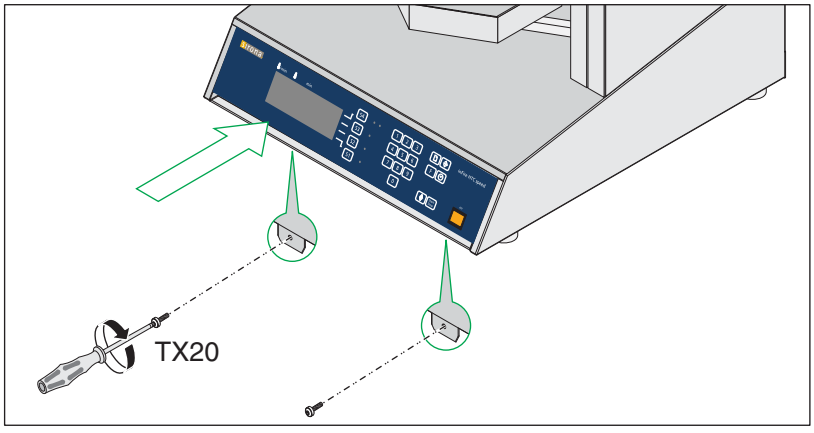
1. Insert the new regulator board supplied and screw it on tightly (6 TX10 screws).
2. Connect all the previously removed connectors, cable lugs, and thermocouple cables to the new regulator board.

10.1.4.5 Installing the new control panel



1. Plug all of the connectors into the the rear side of the new control panel.
2. Insert the new control panel and screw it down with the 4 nuts (M5.5).

10.1.4.6 Final work



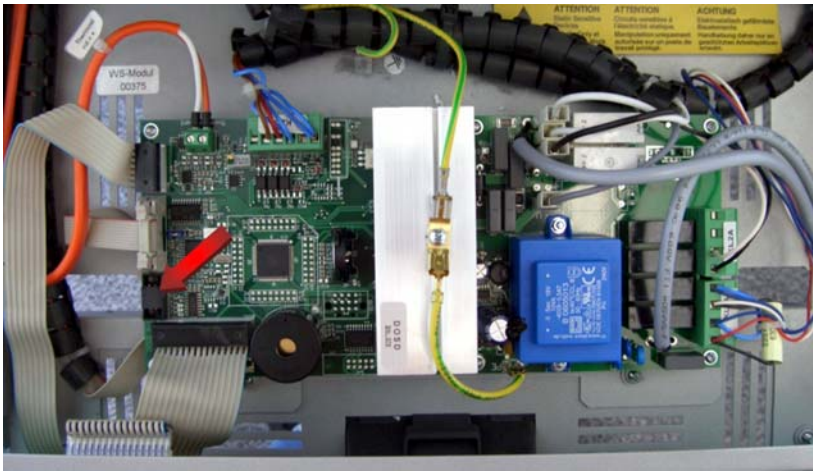
1. Push the drawer inside and screw it tightly with 2 screws (TX20).
2. Plug in the power plug.
3. Switch the unit on at the main switch.
4. Carry out a function test.

10.1.4.7 Updating the control software

Update the control software in the following cases:

- if the software version number is smaller than DOES0033
- if a newer software version is available

✓ The furnace is switched off.



1. **DANGER! Do not touch live components!** Remove the protective cap and connect the programming device "e-lab" to the port marked with the red arrow point.
2. Switch the furnace on.
3. Press the *"prog"* key on the programming device.
4. Wait for the beep after a few seconds.
   Tip: it could be the case that the batteries of the programming device are empty. To charge these the programming device must be connected to a switched on computer for approximately 1 hour via USB cable.
5. Switch the furnace off.
6. Remove the programming device and place the protective cap back onto the port.
7. Switch the furnace on.
8. Press the "F" key.
   ↳ The cursor appears on the LCD display.
9. Enter the following key sequence: 0 8 5 4 0
   ↳ The software is activated.

The current software has the designation DOES0033. Some program positions are already designated in the software that do not actually contain functional temperature profiles. This is the case for program positions 7–8, 12–16, and 18–19. The software generates the following program allocation in the furnace control:

Program No.	Designation
01	Sirona inCoris TZI/ZI super speed single
02	Sirona inCoris TZI/ZI speed
03	Sirona inCoris TZI/ZI speed + dry
04	Sirona inCoris TZI/ZI speed + air
05	Sirona inCoris TZI/ZI classic
06	Sirona inCoris AL classic
07	Sirona inCoris CC (optional)
09	VITA In-Ceram YZ speed
10	VITA In-Ceram YZ classic
11	VITA In-Ceram AL classic
14	Dentsply Crypton (optional)
17	IVOCLAR VIVADENT IPS e.max ZirCAD
20	Free
21	Free
22	Free
23	Free
24	Free
25	Free
26	Free
27	Sintering with predrying
28	Sintering with predrying
29	Sintering with ventilation
30	Sintering with ventilation

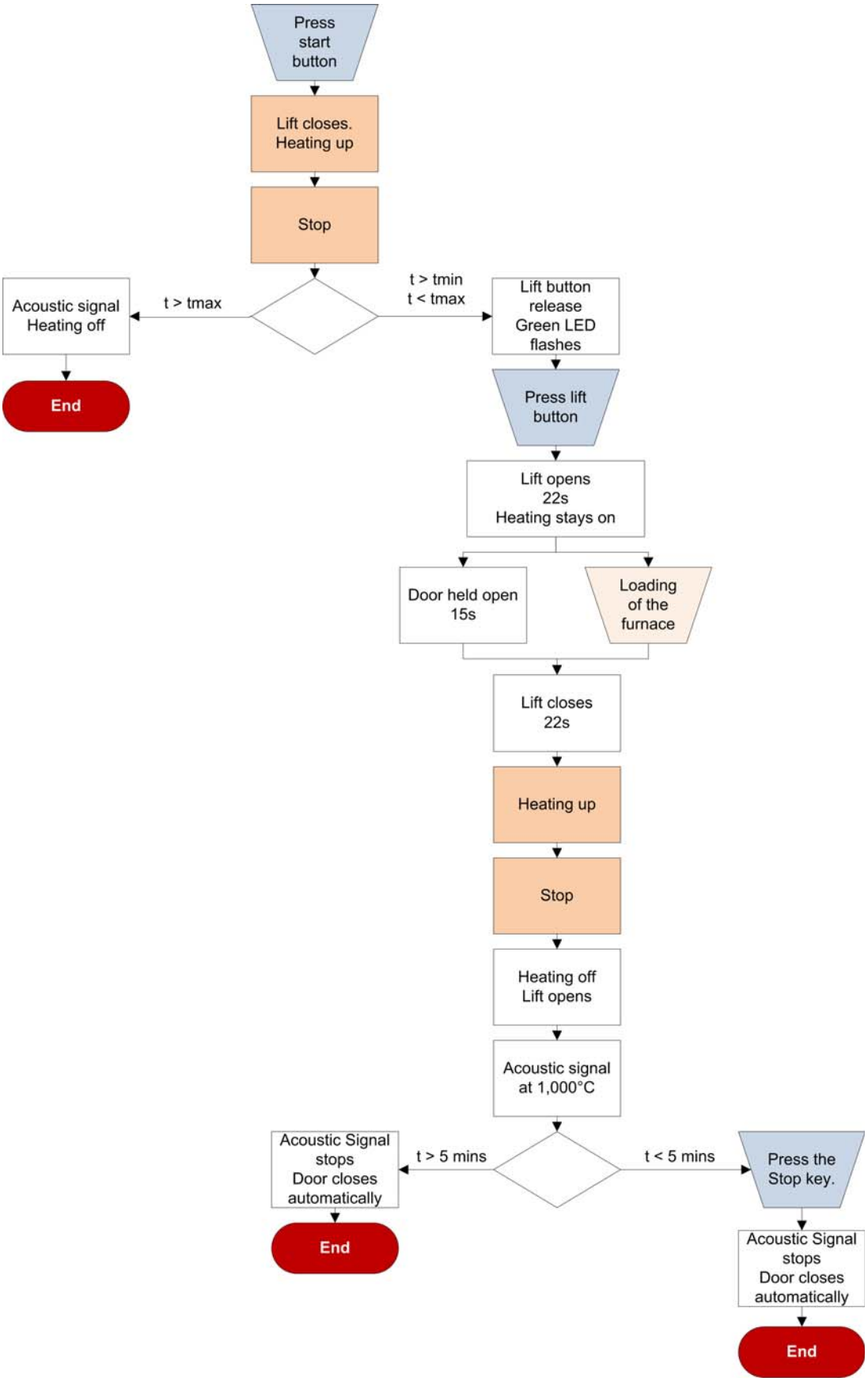
The present software together with the current control allow the so-called "super speed" sintering of single crowns on program position 1. The program sequence differs substantially from the traditional sintering programs.

For super speed sintering, the furnace must be preheated to operating temperature 1,580°C / 2,876°F After preheating (approximately 32 mins), the user has a time window available of 30 mins in which the Superspeed cycle can be activated.

Program No.	Program designation	Preheating time + cycle time (until door opening)	Furnace type
01	Sirona inCoris TZI/ZI super speed single	30 mins + 10.8 mins	220 V, 16 A, 50 Hz
		47 mins + 11.2 mins	220 V, 13 A, 50 Hz = GB version
		72 mins + 15.8 mins	180 V, 16 A, 60 Hz

If the user does not take any action by the end of this time slot, the furnace will switch off again.

The exact program sequence can be viewed in the following diagram.


Press start button
Lift closes. Heating up
Stop
t > tmax
Acoustic signal Heating off
End
t > tmin
t < tmax
Lift button release Green LED flashes
Press lift button
Lift opens 22s Heating stays on
Door held open 15s
Loading of the furnace
Lift closes 22s
Heating up
Stop
Heating off Lift opens
Acoustic signal at 1,000°C
t > 5 mins
Acoustic Signal stops Door closes automatically
End
t < 5 mins
Press the Stop key.
Acoustic Signal stops Door closes automatically
End

10.2 Upgrading to non-precious metal sintering

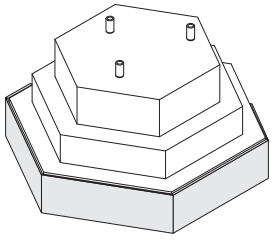
10.2.1 Scope of supply

- Gas management module

- Sinter cover, 4-part

- Coupling kit

- Door change adapter

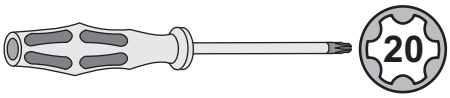


- Changing door, ceramic sintering

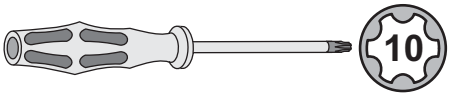
- Furnace door with gas socket

- Zirconium oxide beads, Ø = 1.25 mm

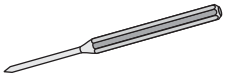
10.2.2 Required tools



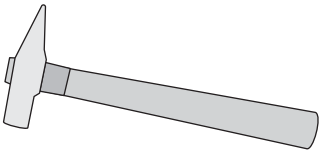
- Screwdriver, Torx®/TX20



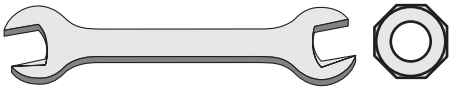
- Screwdriver, Torx® / TX10



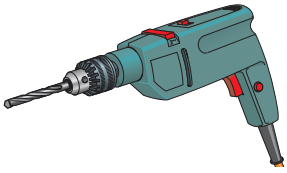
- Center punch



- Hammer



- Open-end wrench SW7
- Open-end wrench SW11



- Suitable battery screw or drilling machine

- Twist drill 3 mm
- Twist drill 9.7mm

- Step drill

10.2.3 Preparation

10.2.3.1 Disconnect the power supply

⚠ WARNING

Electrical power!

Potentially lethal shock hazard!

- ➢ Do not touch live cables and components with wet hands.
- ➢ Please observe the accident prevention regulations for handling electricity.
- ➢ Disconnect the power supply of the unit before installation, maintenance, cleaning, and repair work, and ensure that the power will not be inadvertently switched on.

➢ Disconnect the power supply of the unit and ensure that the power will not be inadvertently switched on.

10.2.3.2 Opening the rear panel of the unit

✓ The power supply is disconnected.

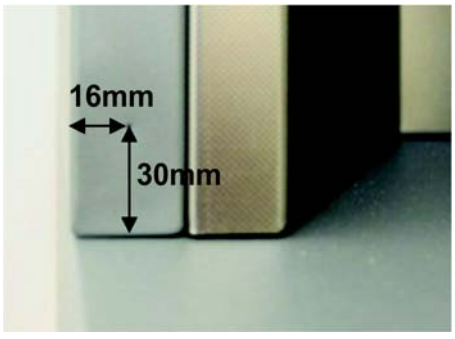
1. Open the rear panel of the unit.

2. Unplug the (green & yellow colored) grounding cable.

10.2.4 Procedure

10.2.4.1 Install the front coupling

Mark and punch the front hole



✓ The unit is switched off and its power plug is disconnected.

1. Mark the position of the drill hole on the left side of the front of the furnace; make it 16 mm from the left edge and 30 mm from the bottom edge.
2. Center punch the mark ⊕ .

Drill the front hole

1. Drill a 3 mm pilot hole with a suitable cordless screwdriver or a drilling machine.

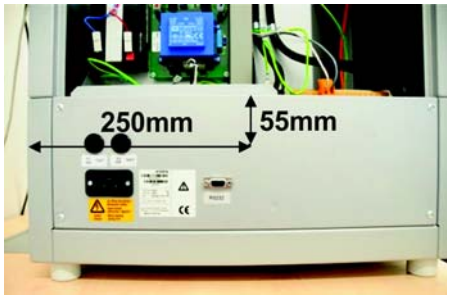
2. Drill the main hole at the front with a diameter of 9.7 mm.

Insert the coupling

1. Remove the coupling from the flexible hose of the furnace door with gas socket.
2. Unscrew the nut on the coupling.
3. Insert the coupling.
4. Screw the nut on the rear side on the coupling and tighten it (open-end wrench SW11 or socket wrench SW11).

10.2.4.2 Install the rear coupling

Mark and punch the rear hole



1. Mark the position of the drill hole on the rear side of the furnace; make it 250 mm from the left edge and 30 mm from the top edge (the lower edge of rear panel opening.)
2. Center punch the mark.

Drill the rear hole

1. Drill a 3 mm pilot hole with a suitable cordless screwdriver or a drilling machine.

2. Drill the main hole on the rear with a diameter of 14 mm. Use a step drill for this.
   Tip: It is advisable to attach a boundary marker on the step drill for 14 mm.

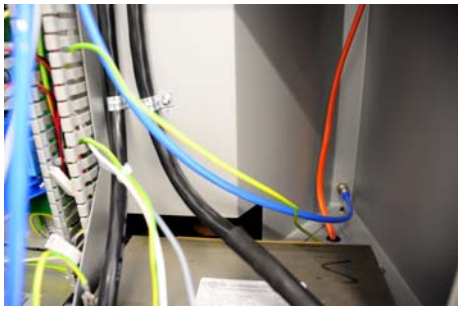
10.2.4.3 Installing the gas management module

1. Remove the cable duct cover.
2. Remove the screws on the E-module (TX20) and replace these with spacer bolts (open-end wrench SW7).

3. If the grounding cable comes out of the cable duct at the side, lay this again so that it emerges upwards from the cable duct.

4. Screw the gas management module with the previously removed screws onto the spacer bolts.

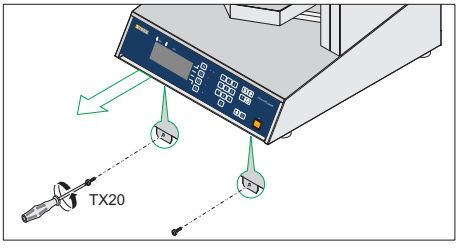
5. Insert the hoses and cable into the cable duct.



6. Insert the open hose end into the front coupling from the rear.

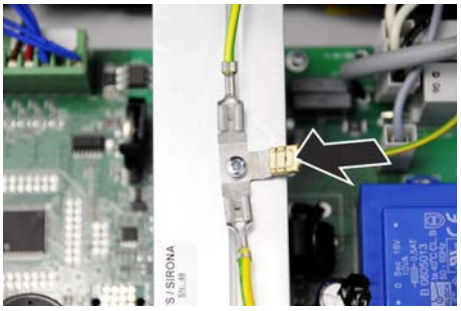
7. Unscrew the nuts on the coupling, insert the coupling, and screw the nuts from the rear side tightly (open-end wrench SW11 or socket wrench SW11).
8. Attach the cable duct cover.
9. Lay the gray cable with the KL2A connector and the grounding cable in the drawer area. **NOTICE! The KL2A connector must be disassembled. Mark the cable before the disassembly.**

10.2.4.4 Connecting cables to the regulator board



1. Open the drawer.

2. Pull the gray cable to the regulator board.
3. Connect the two black cables "1" and "2" to the previously disassembled KL2A connector.
4. Insert the KL2A connector.



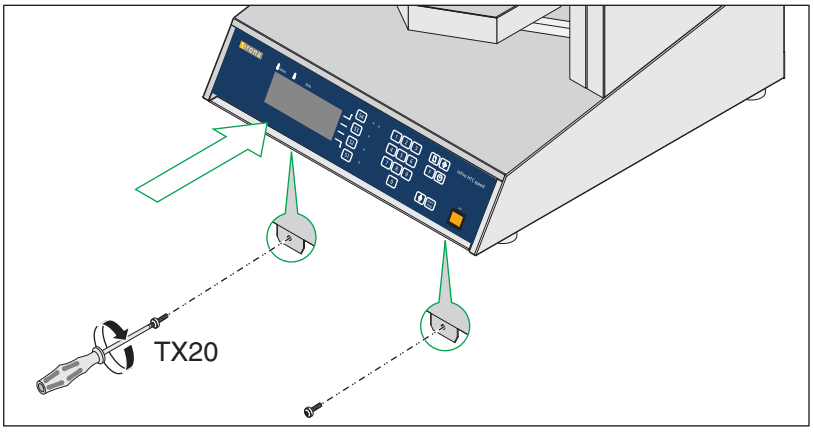
5. Replace the present 2-way flag with the supplied 3-way flag (for a third connection option).
6. Put on the cable lug of the grounding cable (gray cable).

10.2.4.5 Installing the rear panel of the unit

1. Reconnect the grounding cable to the rear panel of the unit.

2. Reinsert the rear cover of the unit and screw it on tight.

10.2.4.6 Final work



1. Push the drawer inside and screw it tightly with 2 screws (TX20).
2. Plug in the power plug.
3. Switch the unit on at the main switch.

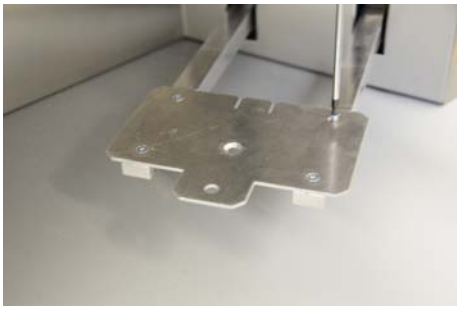
10.2.4.7 Modifying the furnace door

1. Close the furnace door by pressing the lift button.

2. Unscrew the 2 screws on the retaining plate.

3. Move the furnace door downwards and remove the door panel.

4. Unscrew the retaining plate from the lift carriers.

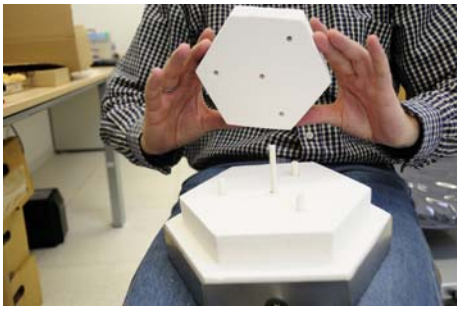


5. **NOTICE! Pay attention to the installation direction (see picture)!**
   Screw on the supplied door change adapter ⓫ .

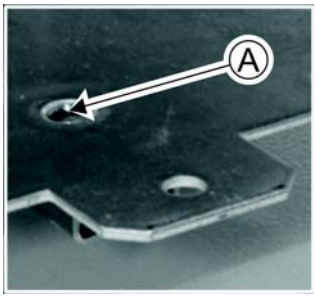
10.2.4.8 Assembling the furnace door with the gas socket

1. Insert the middle guiding tube and tighten it.

2. Insert the lower door insulation.



3. Insert the 3 ceramic tubes and put on the upper door insulation.



4. Ensure that the door guide pin is locked in place in the locating hole (A) provided for this purpose when inserting the furnace door.

5. Push the furnace door until the end stop in the furnace fastening clamp. Unlock the guide pin by pulling it and turning it counter-clockwise. Now pull the door forward carefully until the guide pin locks in place in the corresponding locating hole in the furnace fastening clamp.

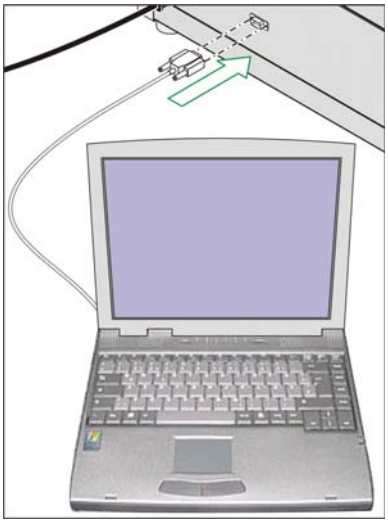
6. Insert the tube of the furnace door with gas socket into the coupling.

11 RS232 interface

11.1 Temperature difference output

The sintering process can be documented on a PC connected to the inFire HTC speed via the RS-232 interface. To do this, proceed as follows:

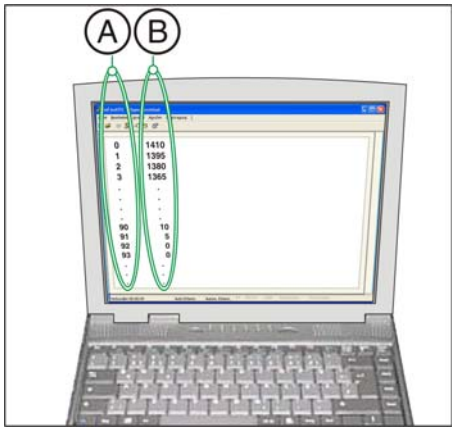
✓ The program *"Hyper Terminal"* must be installed (*"Start"* | *"Programs"* | *"Accessories"* | *"Communication"* | *"Hyper Terminal"*).



1. Connect the PC to the inFire HTC speed via the RS-232 cable.
2. Start the Windows program *"Hyper Terminal"* on the PC under *"Start"* | *"Programs"* | *"Accessories"* | *"Communication"* | *"Hyper Terminal"*.

3. Define the connection during the first start, e.g. with the name "inFire HTC" and a telephone symbol with a book standing next to it.
4. Under "Establish connection via": select the COM port via which the PC is connected to the inFire HTC speed (e.g. COM1) and click *"OK"*.
5. Select the connection settings as follows:
   Bits per second: 9,600
   Data bits: 8
   Parity: None,
   Stop bits: 1
   Flow control: None
6. Click *"OK"*.

   ↳ The telephone icon in Hyper Terminal shows the telephone receiver lifted, i.e. the system is now actively recording.



↳ In the left column (A), the encoded temperature change of the corresponding heat curve is shown at defined times. In the right column (B), the difference is depicted between the encoded set increase and actual increase. As long as the value in the right column is zero, the specified heat curve validated by Sirona is precisely adhered to. For systematic deviations during the actual sintering process, contact the Sirona customer service center. Temperature deviations may occur during the warm-up and cooling phases. These will not cause any operating faults.

Tip: Each time Hyper Terminal is restarted, the configured connection can be directly selected by clicking on the defined icon with the corresponding name (e.g. *"Start"* | *"Programs"* | *"Accessories"* | *"Communication"* | *"Hyper Terminal"* | inFire HTC).

We reserve the right to make any alterations which may be required due to technical improvements.

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